

# Position Statement

**Submission Date:** 3/31/2005  
05-ID-01

**Committee:** Infectious Disease

**Title:** Strengthening surveillance for travel-associated legionellosis and revised case definitions for legionellosis

## **Statement of the Problem:**

Legionellosis is a nationally notifiable disease. Cases are reported electronically through the National Electronic Telecommunications Surveillance System (NETSS), which collects basic demographic information, and/or via a paper-based supplementary case report form which, in addition, collects diagnostic and travel-related information. Since the legionellosis case definition was last revised in 1996, it has become apparent that several changes would improve national legionellosis surveillance. First, increased experience with diagnostic testing has led to a **need to update the laboratory criteria for the diagnosis of legionellosis**. For example, for the serologic criteria, the 1996 case definition required a 4-fold increase in antibody titer to  $\geq 1:128$  against *Legionella pneumophila* serogroup 1. With the availability of newer serologic assays, this requirement means that some cases are not captured by the 1996 definition. Second, outbreaks of travel-associated legionellosis are infrequently identified, even though more than 20% of all cases are thought to be associated with recent travel. In 2004 alone, CDC was contacted regarding over 150 cases of confirmed legionellosis among travelers. Many of these cases occurred among cruise ship passengers or persons staying overnight in large hotels. Like other travel-related infectious diseases, the identification of any given outbreak is hindered by the difficulties inherent in detecting clusters of infections among persons who have recently dispersed from a point source and returned to their home states. Current surveillance for legionellosis **lacks the timeliness and sensitivity needed to detect outbreaks of travel-associated cases**. Timely reporting of travel-associated cases with complete travel information could allow early identification and control of sources of infection.

## **Statement of the desired actions to be taken:**

1. Modify case definitions for all cases of legionellosis (i.e., travel-associated and not travel-associated) from 1996 Nationally Notifiable Diseases to read:

### **Clinical description:**

Legionellosis is associated with two clinically and epidemiologically distinct illnesses: Legionnaires' disease, which is characterized by fever, myalgia, cough, and clinical or radiographic pneumonia; and Pontiac fever, a milder illness without pneumonia

**Laboratory criteria for diagnosis:** (See table for comparison to 1996 laboratory criteria.)

### Confirmed:

- By culture: isolation of any *Legionella* organism from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluid.
- By detection of *Legionella pneumophila* sergroup 1 antigen in urine using validated reagents.
- By seroconversion: fourfold or greater rise in specific serum antibody titer to *Legionella pneumophila* serogroup 1 using validated reagents.

### Suspect:

- By seroconversion: fourfold or greater rise in antibody titer to specific species or serogroups of *Legionella* other than *L. pneumophila* serogroup 1 (e.g., *L. mcdadei*, *L. pneumophila* serogroup 6)
- By seroconversion: fourfold or greater rise in antibody titer to multiple species of *Legionella* using pooled antigen and validated reagents.
- By the detection of specific *Legionella* antigen or staining of the organism in respiratory secretions, lung tissue, or pleural fluid by direct fluorescent antibody (DFA) staining, immunohistochemistry (IHC), or other similar method, using validated reagents.
- By detection of *Legionella* species by a validated nucleic acid assay.

**Case classification:**

- Confirmed: a clinically compatible case that meets at least one of the confirmatory laboratory criteria
  - Travel-associated: a case that has a history of spending at least one night away from home, either in the same country of residence or abroad, in the ten days before onset of illness.
- Suspect: a clinically compatible case that meets at least one of the presumptive laboratory criteria
  - Travel-associated: a case that has a history of spending at least one night away from home, either in the same country of residence or abroad, in the ten days before onset of illness.

**2. Set goals for the timeline for reporting of legionellosis cases:**

- Within 7 days of the notification of a legionellosis case, the investigating health department will ascertain whether the case-patient spent at least one night away from home in the 10 days before onset of illness.
- If a history of travel is present in the 10 days before onset of illness, the state health department will, within 7 days of the initial notification, report travel destination (city and state or country) and dates of travel to CDC and to the state of travel
- If there is no history of travel in the 10 days before onset of illness, the state health department will complete the legionellosis case report to CDC within 30 days of notification.
- If there are epidemiologically linked travel-associated legionellosis cases, CDC will notify within one day and work with state health departments to investigate further.

**Goals of Surveillance:**

- Monitor and describe incidence and trends of legionellosis cases
- Rapidly recognize cases that occur in similar locations or with similar exposures
- Understand risk factors for infection
- Identify opportunities for control and prevention

**Methods of Surveillance:**

All confirmed cases (travel-associated and not travel-associated) should be reported. Suspect cases need not be reported, but should be retained by the state health department to assist with investigations of possible outbreaks.

**Public Health Impact:**

Because the majority of cases are now confirmed under the 1996 case definition by urinary antigen and culture, CDC does not expect a substantial change in the number of reported legionellosis cases under the proposed case definition (table). Outbreaks of legionellosis that occur among travelers are difficult to detect. Although the burden is not well defined, more than 20% of legionellosis cases are thought to be associated with recent travel. Strengthening surveillance would facilitate timely identification of epidemiological links, prompt outbreak investigations, and allow early detection of sources of transmission and implementation of control measures. Travel-associated legionellosis is highly preventable; disease prevention would have a significant impact on public health.

LABORATORY TEST	1996 Definition	2005 Definition (Proposed)
Culture of respiratory secretions or tissue	Confirmed	Confirmed
Urinary antigen for <i>L. pneumophila</i> serogroup 1	Confirmed	Confirmed
Serology – <i>L. pneumophila</i> serogroup 1 using validated reagents	Confirmed—4-fold increase to $\geq 1:128$	Confirmed—4-fold increase
Serology - species-specific antigen other than <i>L. pneumophila</i> serogroup 1	Not used	Suspect
Serology - multiple species (pooled antigen)	Not used	Suspect
Detection of <i>Legionella</i> antigens or staining of the organism	Confirmed—DFA only	Suspect—DFA, IHC, or other similar methods
Validated nucleic acid assay	Not used	Suspect

**References:**

- Benin AL, Benson RF, Besser RE. Trends in Legionnaires Disease, 1980-1998: Declining Mortality and New Patterns of Diagnosis. *Clin Infect Dis* 2002;35:1039-46.
- Centers for Disease Control and Prevention. Case definitions for infectious conditions under public health surveillance. *Morb Mortal Wkly Rep* 1997;46(RR10):1-55.
- Centers for Disease Control and Prevention. Legionnaire's disease associated with a potable water in a hotel – Ocean City, Maryland, October 2003-February 2004. *Morb Mortal Wkly Rep* 2005;54:165-8.
- Cowgill KD, Lucas CE, Benson RF, Shamany S, Brown EW, et al. Recurrence of Legionnaires disease at a hotel in the United States Virgin Islands over a 20-year period. *Clin Infect Dis* 2005;40:1205-7.
- Gorwitz R, Javadi M, Benson R, et al. An outbreak of travel-associated Legionnaires' disease — Las Vegas, 2001 (abstr). 42<sup>nd</sup> Annual Interscience Conference on Antimicrobial Agents and Chemotherapy, San Diego, September 2002.
- Jernigan DB, Hofmann J, Cetron MS, Genese CA, Nuorti JP, et al. Outbreak of Legionnaires' disease among cruise ship passengers exposed to a contaminated whirlpool spa. *Lancet* 1996;347:494-9.
- Joseph CA. Legionnaires' disease in Europe 2000-2002. *Epidemiol Infect* 2004;132:417-24.

**Coordination:**

**Agencies for Response:**

Julie L. Gerberding, MD, MPH, Director  
Centers for Disease Control and Prevention  
1600 Clifton Road NE, Mailstop D-14  
Atlanta, GA 30333  
404.639.7000  
jyg2@cdc.gov

**Agencies for Information:**

David W. Warnock, PhD, Director  
Division of Bacterial and Mycotic Diseases  
National Center for Infectious Diseases  
Centers for Disease Control and Prevention  
1600 Clifton Road NE, Mailstop G-11  
Atlanta, GA 30333  
404.639.3053  
dwarnock@cdc.gov

Matthew R. Moore, MD, MPH, Medical Epidemiologist  
Respiratory Diseases Branch  
Division of Bacterial and Mycotic Diseases  
National Center for Infectious Diseases  
Centers for Disease Control and Prevention  
1600 Clifton Road NE, Mailstop C-23  
Atlanta, GA 30333  
404.639.4887  
matt.moore@cdc.hhs.gov

Scott Becker, Executive Director  
Association of Public Health Laboratories  
2025 M St NW Ste 550  
Washington, DC 20036-3320  
202-822-5227  
202-887-5098 (fax)  
[sbecker@aphl.org](mailto:sbecker@aphl.org)

**Submitting Author:**

Perry F. Smith, MD, State Epidemiologist  
New York State Department of Health  
Tower Building, Room 503  
Albany NY 12237-0608  
518.474.1055  
pfs01@health.state.ny.us

**Co-Author:**

Martha Iwamoto, MD, MPH, Preventive Medicine Resident  
Respiratory Diseases Branch  
Division of Bacterial and Mycotic Diseases  
National Center for Infectious Diseases  
Centers for Disease Control and Prevention  
1600 Clifton Road NE, Mailstop C-23  
Atlanta, GA 30333  
404.639.4745  
miwamoto@cdc.gov